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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/564,421

Applicant(s)

KALKER ET AL.

Examiner

Travis Pogmore

Art Unit

4148

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☒ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF-100)
- Paper No(s)/Mail Date 21 December 2006
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. The instant application having Application No. 10/564421 filed on January 11, 2006 is presented for examination by the examiner.

Oath/Declaration

2. The applicant's oath/declaration has been reviewed by the examiner and is found to conform to the requirements prescribed in 37 C.F.R. 1.63.

Priority

3. As required by M.P.E.P. 201.14(c), acknowledgement is made of applicant's claim for priority based on applications filed on July 11, 2003.
4. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

5. As required by M.P.E.P. 609, the applicant's submissions of the Information Disclosure Statement dated December 21, 2006 is acknowledged by the examiner and the cited references have been considered in the examination of the claims now pending.

Drawings

6. The applicant's drawings submitted are acceptable for examination purposes.

Claim Objections

7. Claim 2 is objected to because of the following informalities: It recites "the digital fingerprint is an audio fingerprints" which leaves the desired singularity or plurality of the audio fingerprint(s) ambiguous. Appropriate correction is required.

Claim Rejections – 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claim 16 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim contains subject matter which was not described in the specification in such a way as to reasonably enable one skilled in the relevant art to make and use the claimed invention. The claim recites "a storage medium" which is not clearly defined in the specification, and thus the scope of the claims is not ascertainable by reference to the specification.

Claim Rejections – 35 USC § 101

10. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

11. Claim 16 is rejected under 35 U.S.C. 101 as directed to non-statutory subject matter of a database system (i.e. software), *per se*. The claim lacks the necessary physical articles or objects to constitute a machine or manufacture within the meaning of

35 U.S.C. 101. It is clearly not a series of steps or acts to be a process nor is it a combination of chemical compounds to be a composition of matter. As such, they fail to fall within a statutory category. It is at best, function descriptive material *per se*.

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." Both types of "descriptive material" are non-statutory when claimed as descriptive material *per se*, 33 F.3d at 1360, 31 USPQ2d at 1759. When functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994).

Merely claiming non-functional descriptive material, i.e. abstract ideas, stored on a computer-readable medium, in a computer, or on an electromagnetic carrier signal, does not make it statutory. See *Diehr*, 450 U.S. at 185-86, 209 USPQ at 8 (noting that the claims for an algorithm in *Benson* were unpatentable as abstract ideas because "[t]he sole practical application of the algorithm was in connection with the programming of a general purpose computer.").

Claim Rejections – 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1-3, 6-8 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Secret key watermarking with changing keys" 10 September 2000, pages 427-429, XP010530642 (hereinafter "Depovere et al.") in view of U.S. Patent Application Pub. No. US 2002/002800 A1 (hereinafter "Conwell et al.).

As to claim 1, Depovere et al. teaches a method of embedding a digital watermark in an information signal; the method comprising

- providing a watermark secret (page 427, column 1 and Fig. 1);
- embedding a digital watermark in an information signal where said embedding is controlled by the watermark secret (page 427, column 1 and Fig. 1); and

deriving the watermark secret from a identifier data item (page 429, column 1, first paragraph, it is inherent that the detector being able to store the secret key patterns means that it must be able to derive the watermark secret from identifier data, otherwise it would be required to generate them on the fly every time), but does not specifically teach calculating a digital fingerprint from the information signal; or

- storing the calculated digital fingerprint as a reference digital fingerprint and storing, in relation to the reference digital fingerprint, a identifier data item.

However, Conwell et al. teaches calculating a digital fingerprint from the information signal (page 1, column 1, paragraph 9 and column 2, paragraphs 18-19); and

- storing the calculated digital fingerprint as a reference digital fingerprint and storing, in relation to the reference digital fingerprint, a identifier data item (page 2, column 1, paragraphs 23 and 25, the database stores an identifier data item,).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Depovere et al. to fingerprint the information signal and store it along with an identifier as in Conwell et al. because this would allow decreased complexity of watermark detection (Depovere et al., page 429, column 1, first paragraph).

As to claim 2, Conwell et al. teaches wherein the information signal is an audio signal (Abstract), the digital fingerprint is an audio fingerprints (Abstract), and the digital watermark is an audio watermark (page 2, column 2, paragraph 35).

As to claim 3, Conwell et al. teaches wherein storing the calculated digital fingerprint and said identifier data item comprises storing the calculated digital fingerprint and the identifier data item in a fingerprint database (page 1, column 1, paragraph 9).

As to claim 6, Conwell et al. teaches where the digital watermark comprises a watermark payload (page 2, column 2, paragraph 35 to page 3, column 1, paragraph 36) and wherein the watermark payload is indicative of the information signal (page 2,

column 2, paragraph 35, since the fingerprint is calculated from the information signal if it is placed in the payload then the payload is indicative of the information signal).

As to claim 7, Depovere et al. teaches further comprising deriving an encryption key from an identifier indicative of an information content of the information signal (page 428, column 2, section 3, a "robust signature" (i.e. identifier) as recited is created by combining features (i.e. information content) of the information signal, and is associated with one of the "secret keys" (i.e. an encryption key)), but does not specifically teach encoding said watermark payload based on an encryption key.

However Conwell teaches encoding said watermark payload based on an encryption key (page 3, column 1, paragraph 38, specifically lines 6-8)

As to claim 8, Conwell et al. teaches wherein the information signal is a video signal (page 4, column 2, paragraph 57).

As to claim 14, Depovere et al. teaches an arrangement for embedding a digital watermark in an information signal; the arrangement comprising

- means for embedding a digital watermark in an information signal where said embedding is controlled by a watermark secret (page 427, column 1 and Fig. 1); but does not specifically teach a means for calculating a digital fingerprint from the information signal; or

- means for storing the calculated digital fingerprint as a reference digital fingerprint and for storing, in relation to the reference digital fingerprint, a identifier data item from which the watermark secret can be derived.

However, Conwell et al. teaches a means for calculating a digital fingerprint from the information signal (page 1, column 1, paragraph 9 and column 2, paragraphs 18-19); or

- means for storing the calculated digital fingerprint as a reference digital fingerprint and for storing, in relation to the reference digital fingerprint, a identifier data item from which the watermark secret can be derived (page 2, column 1, paragraphs 23 and 25).

14. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Depovere et al. in view of Conwell et al. and further in view of U.S. Patent No. 5,724,425 (hereinafter "Chang et al.").

As to claim 4, Depovere et al. and Conwell et al. teach a method according to claim 1, but do not specifically teach wherein the watermark secret is related to the calculated fingerprint by a function which is computationally infeasible to invert.

However, Chang et al. teaches that wherein the watermark secret is related to the calculated fingerprint by a function which is computationally infeasible to invert is well known and expected in the art (column 18, line 59 to column 19, line 3, where the secret is the two numbers P and Q and the fingerprint is the calculated value N).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Depovere et al. and Conwell et al. to relate the watermark secret to the fingerprint with a function that is computationally infeasible to invert as in Chang et al. because this makes the fingerprint cryptographically secure.

As to claim 5, Depovere et al. and Conwell et al. teach a method according to claim 1, but do not specifically teach wherein the watermark secret is determined by a random process.

However, Chang et al. teaches that wherein the watermark secret is determined by a random process is well known and expected in the art (column 18, lines 62-65, since the secret is the two numbers P and Q and they are chosen at random, the secret as a whole is determined at random).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Depovere et al. and Conwell et al. to determine the watermark secret by a random process as in Chang et al. because this makes the fingerprint more cryptographically secure.

15. Claims 9-13 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Conwell et al. in view of Depovere et al.

As to claim 9, Conwell et al. teaches a method of detecting a digital watermark in an information signal; the method comprising

- providing a plurality of digital reference fingerprints each calculated from a respective reference information signal (page 1, column 1, paragraph 9 and page 2, column 1, paragraph 25);

- calculating a digital fingerprint from an information signal (page 1, column 1, paragraph 9 and column 2, paragraphs 18-19); and

- determining a matching digital fingerprint from the plurality of digital reference fingerprints as corresponding to the calculated digital fingerprint (page 2, column 1, paragraph 25); but does not specifically teach where each digital fingerprint is associated with a corresponding watermark secret; or

- detecting whether a digital watermark according to the watermark secret associated with the matching digital fingerprint is present in the information signal.

However, Depovere et al. teaches where each digital fingerprint is associated with a corresponding watermark secret (page 427, column 1 and Fig. 1); and

- detecting whether a digital watermark according to the watermark secret associated with the matching digital fingerprint is present in the information signal (page 427, column 1 and Fig. 1 and page 428, column 2).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Conwell et al. to use a watermark secret as in Depovere et al. because it increases the security of the system (Depovere, page 427, column 2).

As to claim 10, Conwell et al. teaches wherein determining a matching digital fingerprint comprises sending a query to a fingerprint database, the query comprising the calculated digital fingerprint (page 2, column 1, paragraphs 25-26); and receiving from the fingerprint database a response including a identifier data item from which the watermark secret associated with the matching digital fingerprint can be derived (page 1, column 1, paragraph 9).

As to claim 11, Conwell et al. teaches wherein sending a query and receiving a response comprise communicating via a communications network is well known and expected in the art (page 2, column 2, paragraphs 33-34, in particular the reference to sending a fingerprint to CDDDB.com and it returning relevant IDs).

As to claim 12, Conwell et al. teaches wherein the information signal comprises an encoded information signal; and calculating the digital fingerprint comprises decoding the encoded information signal, and calculating the fingerprint from the decoded information signal is well known and expected in the art (page 1, column 1, paragraph 11 to column 2, paragraph 12 and paragraphs 19-20; under the broadest reasonable interpretation of an encoded information signal it is inherent that any information signal that is digital (and thus processable by computer as in paragraphs 11-12) is encoded (i.e. in bits which are specifically determined by bit depth and sample rate); it is also inherent that being able being able to acoustically compare songs

sampled at differed bit rates (and thus the bits would not be identical) as in paragraphs 19-20 requires that the songs be decoded to some other form before calculating a fingerprint.

As to claim 13, Conwell et al. teaches wherein determining a matching digital fingerprint comprises performing a search in a fingerprint database based on reliability information about the calculated digital fingerprint (page 2, column 1, paragraphs 26-29 and page 3, column 2, paragraph 42 to page 4, column 1, paragraph 48, a probabilistic method of determining the most likely match for a given fingerprint (or fingerprints) is reliability information).

As to claim 15, Conwell et al. teaches an arrangement for detecting a digital watermark in an information signal; the arrangement comprising

- means for providing a plurality of digital reference fingerprints each calculated from a respective reference information signal (page 1, column 1, paragraph 9 and page 2, column 1, paragraph 25);
- means for calculating a digital fingerprint from an information signal (page 1, column 1, paragraph 9 and column 2, paragraphs 18-19); and
- means for determining a matching digital fingerprint from the plurality of digital reference fingerprints as corresponding to the calculated digital fingerprint (page 2, column 1, paragraph 25); but does not specifically teach where each digital fingerprint is associated with a corresponding watermark secret; or

- means for detecting whether a digital watermark according to the watermark secret associated with the matching digital fingerprint is present in the information signal.

However, Depovere et al. teaches where each digital fingerprint is associated with a corresponding watermark secret (page 427, column 1 and Fig. 1); and

- means for detecting whether a digital watermark according to the watermark secret associated with the matching digital fingerprint is present in the information signal (page 427, column 1 and Fig. 1 and page 428, column 2).

As to claim 16, Conwell et al. teaches a database system comprising

- a storage medium having stored thereon a plurality of digital reference fingerprints each calculated from a respective reference information signal, and having stored thereon, in relation to each of the digital reference fingerprints, a respective identifier data item (page 2, column 1, paragraphs 23-28, if as in the first example table short excerpts match multiple songs, then it is inherent that a single fingerprint or "master fingerprint" as recited in paragraph 23 will match a single song else it would not be a true fingerprint as recited in page 1, column 1, paragraph 11);

- means for determining a matching digital fingerprint from the plurality of digital reference fingerprints as corresponding to the calculated digital fingerprint (page 2, column 1, paragraphs 27-29); and

- means for sending a response to the watermark processing system, the response comprising the identifier data item stored in relation to the determined

matching digital fingerprint (page 2, column 2, paragraphs 30 and 34, where metadata as in paragraph 30 or IDs as in paragraph 34 is the identifier data); and

- means for receiving a request from a watermark processing system for a watermark secret suitable as an input for embedding a digital watermark in an information signal, the request comprising a digital fingerprint calculated from the information signal by the watermark processing system (page 2, column 1, paragraph 25-26, it is inherent that in order for a database (or other) look-up system to be able to reply with matches for a given fingerprint that it must possess some means for receiving a request), but does not specifically teach where from a respective identifier data item a corresponding watermark secret associated to said digital fingerprint can be derived.

However, Depovere et al. teaches where from a respective identifier data item a corresponding watermark secret associated to said digital fingerprint can be derived (page 429, column 1, first paragraph, it is inherent that the detector being able to store the secret key patterns means that it must be able to derive the watermark secret from identifier data, otherwise it would be required to generate them on the fly every time).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Conwell et al. to use a watermark secret as in Depovere et al. because it increases the security of the system (Depovere, page 427, column 2).

Conclusion

16. The following prior art made of record and not relied upon is cited to establish the level of skill in the applicant's art and those arts considered reasonably pertinent to applicant's disclosure. See MPEP 707.05(c).

U.S. Patent Application Pub. No. US 2002/0138734 A1 (David et al.)

U.S. Patent No. 6,505,160 (Levy et al.)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TRAVIS POGMORE whose telephone number is (571)270-7313. The examiner can normally be reached on Monday through Thursday between 7:30 a.m. and 5:00 p.m. eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Pham can be reached on 571-272-3689. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/THOMAS PHAM/
Supervisory Patent Examiner, Art Unit 4148

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